FLORIDA DEPARTMENT OF **HEALTH**

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Jeb Bush
Governor

John O. Agwunobi, M.D., M.B.A.
Secretary

March 26, 2002

Mr. Joe Alfano
Remedial Project Manager
Environmental Protection Agency
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

SITE: Brown'S Dump
BREAK: 17.7
OTHER: _____

Subject: 5th and Cleveland Incinerator (Emmett Reed Park)
Duval County, Jacksonville, Florida

Dear Joe:

Thanks for calling me for assistance to determine if lead in collards and mustard greens from gardens near this site may cause a health risk. Since the highest lead concentration in these vegetables was 0.28 mg/kg, I used this concentration and average consumption rates of these two types of vegetables to calculate a dose in mg/kg/day for a child or an adult eating these vegetables. The calculated dose tells us if ingesting this concentration of lead in the vegetables is likely to cause illness in children and/or adults.

Average Consumption for Collard Greens = 0.0189 Grams/kg Body Weight-Day

Average Consumption for Mustard Greens = 0.0145 Grams/kg Body Weight-Day

The average consumption rates are included in EPA's Exposure Factors Handbook Volume II – Food Ingestion Factors dated July 1997. Average consumption rates are based on mean per capita intake rates (as consumed) for vegetables based on all sex/age/demographic subgroups. For a child weighing 15 kg, the calculated dose is 0.00008 mg/kg/day using the above intake rates (average consumption) for collard greens and mustard greens with a lead concentration of 0.28 mg/kg. For an adult weighing 70 kg the calculated dose is 0.0004 mg/kg/day.

Comparing the calculated dose to ATSDR's MRLs in the July 1999 Toxicological Profile, eating these vegetables with a lead concentration of 0.28 mg/kg in collards or mustard greens is unlikely to cause illness in children or adults.

I am always glad to be of assistance to your remediation group. If you need further assistance or have any questions please call me at (850) 245-4444 ext. 2310.
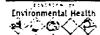
Sincerely,

Susan A. Bland

Susan Ann Bland
Biological Scientist IV
Bureau of Environmental Epidemiology

sab

Environmental Health

4052 Bald Cypress Way. Bin #A-08 • Tallahassee. FL 32399-1712

Collards:

Average Consumption for Collard Greens = 0.0189 Grams/kg Body Weight-Day*
[Pb] in collards = 0.28 mg/kg
15 kg Child

Dose Calculations

(0.28 mg/kg)(0.0189grams/kg BW-day)(15 kg)
= (0.28 grams/day)(280 ug/1000 grams)
=.0784 ug/day = .000078 mg/kg/day or 7.8×10^{-5} mg/kg/day

OR

(0.0189 g/kg BW)(15 kg BW) = 0.2835 g or 283.5 mg Collards

[Pb] = 0.28 mg/kg

(283.5 mg Collards)(0.28 mg/kg Collards)
= (0.0002835 kg)(0.28 mg/kg Collards) = 7.938×10^{-5} mg/kg/day

OR

Total Collards = (0.0189 grams/kg-day)(15 kg) = 0.28 grams collards/day

(0.28 g collards/day)(0.28 ug/g collards) = 0.0784 ug collards/day
= 7.8×10^{-5} mg/kg/day

If convert "as consumed" intake rates to dry weight intake rate:

Cooked collards intake rate (dry weight):

$IR_{dw} = IR_{ac}*[(100-W)/100] = 0.0189 [(100-95.72)/100] = 0.0008$

Therefore, the calculated dose for a child eating cooked collards = 3.4×10^{-6} mg/kg/day

Raw collards intake rate (dry weight):

$IR_{dw} = IR_{ac}*[(100-W)/100] = 0.0189 [(100-93.9)/100] = 0.0012$

Therefore, the calculated dose for a child eating not cooked collards = 5.0×10^{-6} mg/kg/day

Both calculated doses for cooked and raw collards using dry weight are less than the calculated dose for as consumed.

IR = Intake rate   ac = as consumed   dw = dry weight